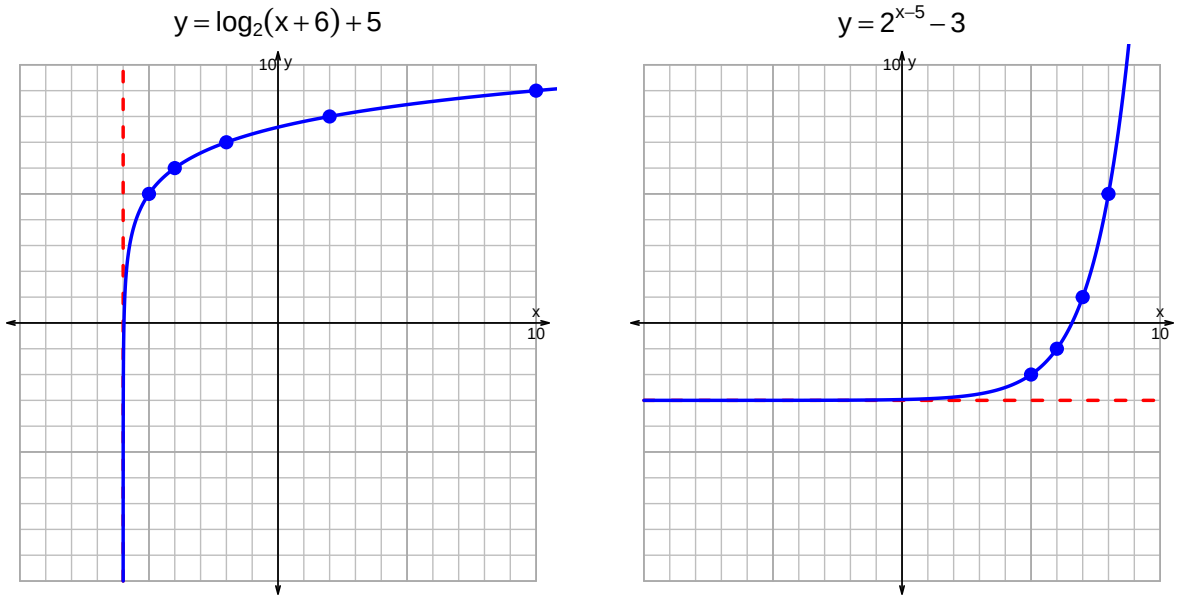
Name: Date:

S18QUIZ: EXP LOG (SOLUTION V9)

1. Graph $y = \log_2(x+6)+5$ and $y = 2^{x-5}-3$ on the grids below. Also, draw any asymptotes with dotted lines.



2. Write (but do not evaluate) the solution to the equation below by writing a logarithmic expression.

$$19 = \left(\frac{7}{3}\right) \cdot 10^{4t/5}$$

Divide both sides by $\frac{7}{3}$.

$$\frac{19 \cdot 3}{7} = 10^{4t/5}$$

Take log, base 10, of both sides.

$$\log_{10}\left(\frac{19 \cdot 3}{7}\right) = \frac{4t}{5}$$

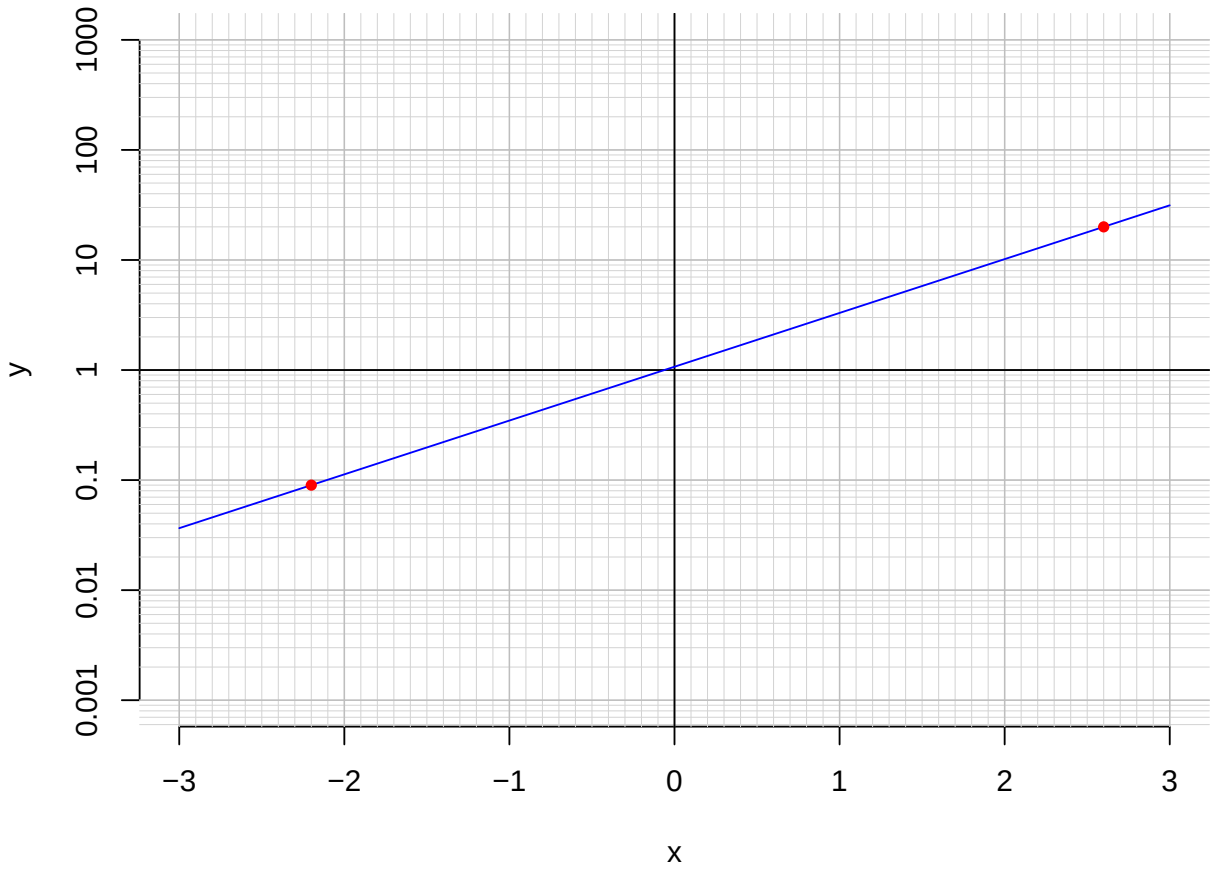
Divide both sides by $\frac{4}{5}$.

$$\frac{5}{4} \cdot \log_{10}\left(\frac{19 \cdot 3}{7}\right) = t$$

Switch sides.

$$t = \frac{5}{4} \cdot \log_{10}\left(\frac{19 \cdot 3}{7}\right)$$

3. An exponential function $f(x) = 1.07 \cdot e^{1.13x}$ is graphed below on a semi-log plot.



a. Using the plot above, evaluate $f(2.6)$.

$$f(2.6) = 20$$

b. Express $f^{-1}(x)$, the inverse of f.

$$f^{-1}(x) = \frac{1}{1.13} \cdot \ln\left(\frac{x}{1.07}\right)$$

c. Using the plot above, evaluate $f^{-1}(0.09)$.

$$f^{-1}(0.09) = -2.2$$